

Contact-Centre Data Analytics with Python and pandas

Prepare interaction data and communicate useful operational findings

FA-0760

Data & Analytics

Introduction

Develop practical skills for turning raw contact-centre data into a usable analytical dataset. Work with calls and permitted customer-interaction exports, inspect data quality and present findings for operational decisions.

The course assumes basic analytics and pandas familiarity. Contact, screen and speech analytics are discussed as wider programme considerations; hands-on practice centres on the supplied tabular and text data.

Learning outcomes

- Identify suitable call, email, chat and other interaction-data sources.
- Collect, parse, clean and preprocess a prepared dataset.
- Use pandas indexing, DataFrames and file readers appropriately.
- Explore patterns, interpret findings and select clear charts or tables.
- Explain how interaction analytics can support service review and agent coaching without assuming guaranteed performance improvements.
- Recognise programme-design challenges and critically compare reported contact-centre practices.

Prerequisites

- Familiar with data analytics.

- Familiar with analytics tools such as Pandas.
- Basic practical analytics skills.

Basic Python familiarity and access to authorised anonymised or synthetic training data.

Training outline

1. Module 1 — Analytics context and contact-centre sources

- Introduction to the World of Business and Data
- Relevant Terms Explained
- Data Analyst Compared to Other Data Jobs
- Call and customer-interaction data sources and collection tactics.
- Prepare datasets for operational questions; define assumptions and limitations.
- Discuss contact, screen and speech analytics as complementary capabilities, not automatically available in pandas.

2. Module 2 — pandas foundations for practical work

- Label-based .loc versus position-based .iloc indexing.
- Python indices, methods, parameters and arguments.
- Datasets and DataFrames; create a DataFrame from scratch.

3. Module 3 — Reading text and flat data

- File vs File Object, Read vs Parse
- Structured vs Semi-Structured and Unstructured Data
- Data Connectivity through Text Files
- Fixed-width Files
- CSV Files with pandas
- Importing Data with the "index_col" Parameter
- Importing *.json Files

4. Module 4 — Collection, cleaning and preprocessing

- Implement a permitted sample-data collection workflow.
- Inspect quality, clean records and prepare suitable analytical fields.
- Document transformations and validate the resulting dataset before interpretation.

5. Module 5 – Interpretation and presentation

- Explore patterns and communicate operational findings with appropriate graphs, charts or tables.
- Discuss potential service issues, coaching questions and decision-making limitations.
- Review analytics-programme design challenges and compare illustrative practices without claiming unverified external case studies.